

20-119-1-23/52

The Radiographic Investigation of 1,4-di-Anilido-Anthraquinone and  
1,4-Dimesido-Anthraquinone

of the methyl groups to all meta-positions of the benzene nucleus creates so great spatial difficulties that the coming out with the anthraquinone cycles from the coplanarity amounts to almost  $90^\circ$ . Thereby the inner-molecular linkage is considerably weakened. There are 2 figures, 1 table, and 5 references, all of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley im. K. Ye. Voroshilova (Scientific Research Institute of Organic Semiproducts and Dyes imeni K. Ye. Voroshilov). Nauchno-issledovatel'skiy fiziko-khimicheskiy institut im. L. Ya. Karpova (Scientific Physical-Chemical Research Institute imeni L. Ya. Karpov)

PRESENTED: November 20, 1957, by N. V. Belov, Member, Academy of Sciences, USSR

SUBMITTED: August 16, 1957

Card 6/6

SOV/20-120-6-21/59

AUTHORS: Shigorin, D. N., Shcheglova, N. A.,  
Nurmukhametov, R. N., Dokunikhin, N. S.

TITLE: The Effects of the Position and of the Nature of the Sub-  
stituent on the Fluorescence Spectra of Anthraquinone Deriv-  
atives in Frozen Solutions (Vliyaniye polozheniya i prirody  
zamestitelya na spektry fluorestsentsii proizvodnykh antra-  
khinona v zamorozhennykh rastvorakh)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 120, Nr 6,  
pp. 1242 - 1245 (USSR)

ABSTRACT: First a survey of previous papers and of the present state  
of the problem under review is given. This is a study of the  
fluorescence of much diluted solutions ( $C = 10^{-4}$  to  $10^{-5}$  mol/l)  
of anthraquinone and of its derivatives at 77°K. n-heptane,  
n-hexane and n-octane served as a solvent. The spectra were  
excited by a group of mercury lines. A fine structure of the  
oscillations was found in the fluorescence spectra of anthra-  
quinone, of its  $\beta$ -derivatives ( $\beta$ -Cl-anthraquinone,  $\beta$ -methyl  
anthraquinone,  $\beta$ -amino anthraquinone) and of anthrone. The  
spectrum exhibited by anthraquinone in different solvents remains

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The Effects of the Position and of the Nature of the      SOV/20-120-6-21/59  
Substituent on the Fluorescence Spectra of Anthraquinone Derivatives in  
Frozen Solutions

the same. It has 24 - 28 lines and shows a complicated structure. The spectrum of anthraquinone apparently is divided into several parts by the most intensive electron oscillation bands. The shape of the spectrum is repeated in each of these parts. These principal bands are divided into several components. When hexane is used instead of octane the number of components and the nature of the splitting-up is changed, the position of the bands and the distances between them are maintained. The principal form of the spectrum is maintained in the spectra of all compounds with a fine structure. It exhibits a three times repeated picture in the ranges between the intensive bands. The spectra of the  $\alpha$  derivatives of anthraquinone are markedly shifted towards-red as compared to the spectra reviewed above. They appear in the form of rather washed-out bands. The spectrum of  $\beta$ -oxy anthraquinone also consists of washed-out bands and is shifted towards red. The evidence advanced substantiates the hypotheses concerning the influence of the position of the substituent and of its nature upon the fluorescence spectra of the molecules under consideration.

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The Effects of the Position and of the Nature of the      SOV/20-120-6-21/59  
Substituent on the Fluorescence Spectra of Anthraquinone Derivatives in  
Frozen Solutions

There are 2 figures, 1 table, and 7 references,      which  
are Soviet.

PRESENTED:      March 27, 1958, by A. N. Terenin, Member, Academy of  
Sciences, USSR

SUBMITTED:      March 21, 1958

1. Anthracene solutions--Fluorescence
2. Anthracenes--Spectra
3. Anthracenes--Structural analysis

Card 3/3

KOROLEV, A.I., otv.red.; VUL'FSON, N.S., zam.otv.red.; BOGDANOV, S.V., red.; DOKUNIKHIN, N.S., red.; MASLENNIKOVA, Ye.V., red.; FODIMAN, I.V., red.; KHOMSKIY, I.G., red.; ZETKIN, V.I., red.; SHPAK, Ye.G., tekhn.red.

[Organic intermediate products and dyes; collected articles]  
Organicheskie poluprodukty i krasiteli; sbornik statei. Moskva,  
Gos.nauchno-tekhn.izd-vo khim.lit-ry. No.1. 1959. 238 p.  
(MIRA 13:7)

1. Nauchno-issledovatel'skiy institut organicheskikh polupro-  
duktov i krasiteley.

(Dyes and dyeing)

(Aromatic compounds)

DOKUNIKHIN, N.S.; YEGOROVA, L.M.

Substitution of a sulfonic group by chlorine in anthraquinone derivatives. Org. poluprod. i kras. no.1:72-82 '59.

(MIRA 14:11)

(Anthraquinones)

(Dyes and dyeing--Textile fibers)

DOUGHERTY, H.S.

Conversion of aromatic isocyanates and isothiocyanates under  
the action of aluminum chloride. Org. poluprod. 1 kras.  
no.1:148-159 '59. (I. I. 14:11)

(Aluminum chloride)  
(Isothiocyanates)  
(Isocyanates)

AUTHORS: Dokunikhin, N. S., Gayeva, L. A. SOV/79-29-1-62/74

TITLE: Investigation in the Field of Organic Isocyanates (Issledovaniye v oblasti organicheskikh izotsianatov). V. On the Transformation Mechanism of Aryl Isocyanates ~~Under Action~~ of Aluminum Chloride (V. O mekhanizme prevrashcheniy arilizo-tsianatov pri deystvii khloristogo alyuminiya)

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 1, pp 297-301 (USSR)

ABSTRACT: In a previous paper (Ref 1) the authors showed that phenyl isocyanate and its cyclic dimer with molten  $AlCl_3$ , NaCl yield 3-phenyl-2,4-dioxo tetra hydro-quinazoline, whereas naphthyl isocyanate passes over into naphthostyryl (Ref 2). Aryl isothiocyanates form thionic compounds (Ref 3). It is the aim of the present paper to explain the mechanism of these transformations. In the case of formation of 3-phenyl-2,4-dioxo tetrahydro-quinazoline (V) two molecules of phenyl isocyanate (I) take part which makes a previous dimerization of the isocyanate necessary. The cyclic dimer (IV) (Ref 4) forms from the monomer only in the case of action of tertiary amines or phosphines.  $AlCl_3$  causes at low temperature the transforma-

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SOV/79-29-1-62/74

Investigation in the Field of Organic Isocyanates. V. On the Transformation  
Mechanism of Aryl Isocyanates Under Action of Aluminum Chloride

tion of (I) into the cyclic trimer (IV). The dimer of (I) remains unchanged under these conditions and yields together with molten  $\text{AlCl}_3 \cdot \text{NaCl}$  the compound (V), whereas the trimer remains stable against  $\text{AlCl}_3$  at increased temperature. The formation of (V) from (I) takes place also with  $\text{AlCl}_3$  in organic solvents at  $130 - 160^\circ$ . Consequently, temperature is the only factor in connection with the synthesis of different products from phenyl isocyanate. In conclusion, the following results were obtained: phenyl isocyanate (I) forms together with  $\text{AlCl}_3$  triphenyl isocyanate and at higher temperature 3-phenyl-2,4-dioxo tetrahydro-quinazoline. The dimer of (I), 1,3-diphenyl uretidine-2,4-dione is stable against  $\text{AlCl}_3$  at low temperature, in the case of increased temperature, however, it passes over into compound (V). Compound (VI) does not react with  $\text{AlCl}_3 \cdot \text{NaCl}$ . In the case of an action of  $\text{AlCl}_3$  the chloric anhydride of

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Investigation in the Field of Organic Isocyanates. V. On the Transformation  
Mechanism of Aryl Isocyanates Under Action of Aluminum Chloride

SOV/79-29-1-62/74

phenyl carbamic acid does not lead to compound (V). The transformation of aryl isocyanates by  $AlCl_3$  is in connection with a partial polarization of the nitrogen-oxygen-bonds and in the case of increased temperature with the activation of the aromatic nucleus. There are 8 references, 4 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (Scientific Research Institute for Organic Intermediate Products and Dyes)

SUBMITTED: September 2, 1957

Card 3/3

SOV/79-29-8-66/81

5(3).  
AUTHORS:

Dokunikhin, N. S.; Oksengendler, G. M. (Deceased),  
Shteynberg, Ya. B.

TITLE:

Derivatives of the Benz-(c,d)-indoline. III. The Salts of  
1-Methyl-2-methylthiobenz-(c,d)-indolinium and the Products of  
Their Condensation With Compounds Containing an Active Methylene  
Group

PERIODICAL: Zhurnal obshchey khimii, 1959, Vol 29, Nr 8, pp 2742-2745 (USSR)

ABSTRACT:

N-methylthionaphthostyryl [1-methyl-2-thiono-benz-(c,d)-indoline]  
(I), described already earlier by Dokunikhin (Ref 3), reacting  
with dimethylsulphate forms a satisfactory quantity of the  
methylsulphate of 1-methyl-2-methylthiobenz-(c,d)-indolinium (II).  
The latter decomposes if the air is humid and separates methyl-  
mercaptan. The more stable iodide (III) was obtained from (I)  
under the influence of methyl iodide (Scheme 1). The quaternary  
salts condensate easily with compounds containing an active  
methylene group, forming colored products. When (II) is heated  
with ethylcyanacetate in anhydrous alcohol in the presence of  
triethylamine, the yellow indoline (IV) (Scheme 2) is formed.  
Under the same conditions the following products of a violet  
color were obtained: by condensation with acenaphthenone and

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Derivatives of the Benz-(c,d)-indoline. III.

SOV/79-29-8-66/81

The Salts of 1-Methyl-2-methylthiobenz-(c,d)-indolinium and the Products of Their Condensation With Compounds Containing an Active Methylene Group

indoxyl 2-(1-acenaphthanylidene-2-on)-N-methyl-benz-(c,d)-indoline (V), 2-(2-indolinylidene-3-on)-N-methyl-benz-(c,d)-indoline (VI), by condensation with 1-n-tolyl-3-methylpyrazol-5-on the blackish-brown 2-(1-n-tolyl-3-methyl-4-pyrazolylidene-5-on)-N-methyl-benz-(c,d)-indoline (VII). All three products dissolve in organic solvents only, but dye acetate fibers. The absorption spectra of these products are shown in the figure. A comparison of the absorption spectrum of (V) with that of the 1-acenaphthene indigo ( $\lambda_{\text{max}} = 552 \text{ m}\mu$ ) shows that the substitution for the 3-oxoindole residue of the 1-methyl-benz-(c,d)-indoline residue leads to a hypsochromic shift of the maximum by 8 m $\mu$ . This phenomenon is even better marked in the comparison of (VI) with indigo. There are 1 figure and 4 references, 3 of which are Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley (Scientific Research Institute of Organic Semi-finished Products and Dyes)

SUBMITTED: June 21, 1958

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SOV/80-32-3-35/43

5(3)

AUTHORS: Lokunikhin, N.G.<sup>S.</sup>, Kravchitskiy, B.M., Matskevich, P.M., Blinov, V.A., Vitokhina, E.Ya.

TITLE: Linear Dia-Azo Dyes Which are Derivatives of Oxadiazol and Thiodiazol (Dyamyie disazokrasiteli - proizvodnyye oknadiazola i tiodiazola)

PERIODICAL: Zhurnal prikladnoy khimii, 1959, Vol XXXII, Nr 3, pp 664-667 (USSR)

ABSTRACT: Linear azo dyes containing heterocyclic nuclei connected with the chain by conjugated double bonds are investigated here. The auxochromes are also connected by conjugated double bonds to the chain. An oxadiazol and thiodiazol ring is introduced to the same chain. The dyes prepared are: 2,5-bis-(4-nitrophenyl)-1,3,4-oxadiazol, 2,5-bis-(4-aminophenyl)-1,3,4-oxadiazol, 2,5-bis-(4-nitrophenyl)-1,3,4-thiodiazol, and 2,5-bis-(4-aminophenyl)-1,3,4-thiodiazol. The dyes are resistant to water, soap solution and sweat.

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SCV/80-32-3-35/43

Linear Dis-azo Dyes Which are Derivatives of Oxadiazol and Thiodiazol

There are 17 references, 8 of which are Soviet, 6 German, 2 French and 1 Italian.

SUBMITTED: July 26, 1957

Card 2/2

DOKUNIKHIN, N.S.; SHTEYNBERG, Ya.B.

Azine dyes, derivatives of N-methylbenz-(c,d)-indoline. Zhur.  
(MIRA 14:4)  
VKHO 5 no.1:110-111 '60.

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye.Voroshilova.  
(Dyes and dyeing) (Pyridine) (Indoline)

DOKUNIKHIN, N.S.; SHTEYNBERG, Ya.B.

Monomethinacyanine derivatives of benz-(c,d)-indoline.  
Zhur. VKHO 5 no, 2:239-240 '60.

(MIRA 14:2)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye. Voroshilova.  
(Benzindolinium compounds)



NURMUKHAMEDOV, R.N.; POPOVA, Ye.G.; DOKUNIKHIN, N.S.

Luminescence of solutions and powders of chrysene at 77° K. Opt.  
i spektr. 9 no.5:593-600 N '60. (MIRA 13:11)  
(Chrysene--Spectra)

S/048/60/024/006/019/030/XX  
B013/B067

AUTHORS: Nurmukhametov, R. N., Shigorin, D. N., and Dokunikhin, N. S.

TITLE: Luminescence of Solutions of Thioindigo<sup>1</sup> and Its Two  
Derivatives at 77°K

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,  
Vol. 24, No. 6, pp. 728-729

TEXT: A method of producing luminescence spectra and a long-wave absorption line with a distinct structure (Ref. 1), developed by E. V. Shpol'skiy and his collaborators with aromatic hydrocarbons was extended by the authors to compounds with heteroatoms. Data are presented on the study of the spectra of thioindigo, 5.5'-dimethylthioindigo, and 6.6'-diethoxythioindigo which have a certain solubility in n-hydrocarbons. The solutions of these compounds frozen at 77°K yielded spectra with a distinct vibrational structure which, in the series of the solvents - from hexane to nonane - gradually became blurred. An absorption spectrum was obtained also for thioindigo in n-hexane. The relatively simple spectrum must be ascribed to the transition of the  $\pi$ -electron in the  $>C=C<$  group.

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Luminescence of Solutions of Thioindigo  
and Its Two Derivatives at 77°K

S/048/60/024/006/019/030/XX  
B013/B067

Although the thioindigo molecule contains four heteroatoms, the long-wave absorption and emission spectra are caused by the  $\pi \rightarrow \pi^*$ -transition and not, as usual, by  $n \rightarrow \pi^*$ . The alcoholic solution which does not luminesce at all at room temperature, has a blurred emission spectrum at 77°K. Regarding its position, it is in agreement with the spectra of the n-hydrocarbon solutions. The similar behavior of alcoholic and neutral solutions indicates that the deactivation of molecules in alcohol is not only determined by H-bridges. A detailed description and analysis of spectra influenced by media with different intermolecular hydrogen bonds are given in Ref. 8. The present paper was read at the Eighth Conference on Luminescence (Molecular Luminescence and Luminescence Analysis) which took place in Minsk from October 19 to 24, 1959. There are 8 references: 4 Soviet, 1 German, and 1 US.

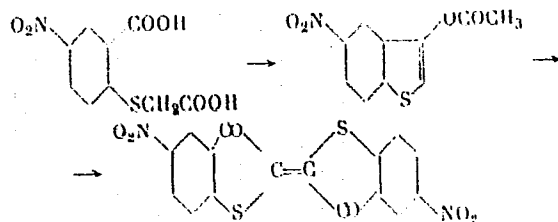
ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physico-chemical Institute imeni L. Ya. Karpov)

Card 2/2

5.3010

77908  
307/79-30-2-59/78

AUTHORS: Dokunikhin, N. S., Gerasimenko, Yu. Ye.  
 TITLE: Investigation in the Field of Thioindigoid Dyes.  
 III. Dinitro-Substituted Thioindigo  
 PERIODICAL: Zhurnal obshchey khimii, 1960, Vol 30, Nr 2,  
 pp 635-638 (USSR)  
 ABSTRACT: The influence of electrophilic substituents on the  
 color of thioindigo was studied in 3 dyes with nitro  
 groups in 5,5' -, 6,6' -, and 7,7' -position.  
 5,5' -dinitrothioindigo was obtained in the reaction



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Investigation in the Field of Thioindigoid  
Dyes. III. Dinitro-Substituted Thioindigo

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SOV/79-30-2-59/78

The starting compound S-(2-carboxy-4-nitrophenyl)-thioglycolic acid was obtained in the reaction of thioglycolic acid and 2-chloro-5-nitrobenzoic acid. The starting compound was cyclized by boiling in acetic anhydride in the presence of anhydrous sodium acetate; the reaction gave 5-nitro-3-acetoxythionaphthene. The latter was oxidized by boiling with ferric chloride in 10% HCl and gave 5,5'-dinitrothioindigo (orange-colored crystals, from nitrobenzene; yield 32%; 370-375° C, decomp). 6,6'-substituted derivative was synthesized similarly. Diazotization of 4-nitroanthranilic acid, treatment with potassium ethyl xanthate, and decomposition of the ethyl xanthate in the presence of chloroacetic acid gave S-(2-carboxy-5-nitrophenyl)-thioglycolic acid. The latter on boiling with anhydrous sodium acetate and acetic anhydride gave

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Investigation in the Field of Thioindigoid  
Dyes. III. Dinitro-Substituted Thioindigo

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SOV/79-30-2-59/78

gave 6-nitro-3-acetoxymethionaphthene, which on boiling with ferric chloride in 10% HCl gave

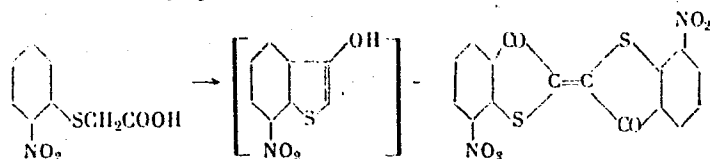
6,6'-dinitrothioindigo (purple crystals; from nitrobenzene; yield 76%; 385° C decomp).

S-(o-nitrophenyl)-thioglycolic acid was added slowly to ice-cold chlorosulfinic acid, and left standing for 2 hr. Subsequently, 2 drops of bromine were added, the mixture left standing for another 2 hr, and

decomposed with ice. The reaction gave

7,7'-dinitrothioindigo (brown crystals, from nitrobenzene; yield 90.5%; did not decompose at 400° C).

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Investigation in the Field of Thioindigoid  
Dyes. III. Dinitro-Substituted Thioindigo

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The absorption maxima determined in benzene with type SF-2m recording spectrophotometer gave the following values of  $\lambda_{\max}$  (arranged in ascending order):

5,5'-dinitrothioindigo	513 m $\mu$
7,7'-dinitrothioindigo	524 m $\mu$
Thioindigo	545 m $\mu$
6,6'-dinitrothioindigo	567 m $\mu$

It follows that the electrophilic nitro group in ortho- and para-positions with respect to the sulphur atom (5,5'- and 7,7'-positions) cause a hypsochromic shift of the absorption maximum, and the metaposition (6,6'-position) a bathochromic shift. This is unlike the effect produced by electron-donor substituents such as alkoxy, amino, methyl, and other groups which produce

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Investigation in the Field of Thioindigoid  
Dyes. III. Dinitro-Substituted Thioindigo

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the opposite effects, i e., a bathochromic shift when  
in ortho- or para- position, and hypsochromic shift  
when in meta-position. There are 7 references, 1 U.S.,  
3 German, and 3 Soviet. The U.S. reference is:  
W. R. Brode, G. M. Wyman, J. Research Natl. Bur.  
Standards. 47, 170 (1951).

ASSOCIATION: K. Ye. Voroshilov Scientific Research Institute of  
Organic Intermediates and Dyes (Nauchno-issledovatel'skiy  
institut organicheskikh poluproduktov i krasiteley  
imeni K. Ye. Voroshilova)

SUBMITTED: February 12, 1959

Card 5/5



S/079/60/030/04/39/080  
B001/B016

AUTHORS: Dokunikhin, N. S., Gerasimenko, Yu. Ye.

TITLE: Investigations in the Field of Thioindigo Dyes.<sup>6</sup>  
IV. Mononitro-substituted Thioindigo Derivatives

PERIODICAL: Zhurnal obshchey khimii, 1960, Vol. 30, No. 4, pp. 1231-1233

TEXT: In the synthesis of monochloro-, monomethyl-, monoethoxy thioindigo described in publications (Ref. 1), the color of the monosubstituted thioindigo dyes is not compared with that of the corresponding disubstituted and nonsubstituted thioindigo. The authors of the present paper synthesized 5- and 6-mononitro-indigo and investigated the absorption spectra of their solutions in benzene. The dyes were formed by condensation of the corresponding nitro-acetoxy-thionaphthenes (Ref. 2) with thionaphthene-quinone-2-(p-dimethyl-amino)-anil in acetic acid, in the presence of piperidine, as well as by condensation of 3-hydroxy-thionaphthene with nitro-thionaphthene-quinone-2-(p-dimethyl-amino)-anils (Scheme 1). Nitro-thionaphthene-quinone-2-(p-dimethyl-amino)-anils are formed by reaction of nitro-acetoxy-thionaphthenes with p-nitroso-

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Investigations in the Field of Thioindigo Dyes. S/079/60/030/04/39/080  
IV. Mononitro-substituted Thioindigo Derivatives B001/B016

dimethyl aniline in soda solution (Scheme 2). When entering into reaction with thionaphthene-quinone-2-(p-dimethyl-amino)-anil and p-nitroso-dimethyl aniline, the nitro-acetoxy-thionaphthenes exhibit the same reactivity as 3-hydroxy-thionaphthene and its derivatives. The absorption maxima of the mononitro-substituted thioindigo compounds dissolved in benzene are given in the table. Contrary to the unsymmetrical cyanine dyes, the mononitro-substituted thioindigo dyes show a more intense color than it would be the case if the nitro group in mononitro-indigo exerted the same effect on the color as each nitro group in the corresponding dinitro-substituted dye. There are 4 references, 2 of which are Soviet. ✓

ASSOCIATION: Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley imeni K. Ye. Voroshilova, Moskva  
(Scientific Research Institute of Organic Semiproducts and  
Dyes imeni K. Ye. Voroshilov, Moscow)

SUBMITTED: April 13, 1959

Card 2/2

DOKUNIKHIN, N.S.; GERASIMENKO, Yu.Ye.

Thioindigo dyes. Part 5: Effect of methyl groups and of  
the halogen on the color of thioindigo. Zhur.ob.khim. 30  
no.6:1987-1989 Je '60. (MIRA 13:6)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K. Ye. Voroshilova, Moskva.  
(Thioindigo)

DOKUNIKHIN, N.S.; SHTEYNBERG, Ya.B.

Derivatives of benz[c,d]indoline. Part 5: Monomethinecyanines  
derivatives of benz[c,d]indoline. Zhur.ob.khim. 30 no.6:  
1989-1992 Je '60. (MIRA 13:6)

1. Nauchno-issledovatel'skiy institut organicheskikh  
poluproduktov i krasiteley.  
(Benzindoline) (Cyanines)

KRASOVITSKIY, B.M.; MATSKEVICH, R.M.; DOKUNIKHIN, N.S.; TRUBITSYNA, N.A.

Direct disazo dyes derived from oxadiazole and thiodiazole. Part  
2: Comparative study of isomeric disazo dyes derived from thiodiazole.  
Zhur.ob.khim. 30 no.8:2608-2613 Ag '60. (MIRA 13:8)

1. Khar'kovskiy gosudarstvennyy universitet i Nauchno-issledovatel'-  
skiy institut organicheskikh poluproduktov i krasiteley.  
(Dyes and dyeing)  
(Thiadiazole)

NURMUKHAMETOV, R.N.; SHIGORIN, D.N.; DOKUNIKHIN, N.S.

Luminescence of thioindigo solutions at low temperatures. Zhur.  
fiz.khim. 34 no.9:2055-2059 S '60. (MIRA 13:9)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova.  
(Thioindigo)

81416

S/020/60/132/06/41/068  
B004/B005

5.4/30

AUTHORS: Shigorin, D. N., Shcheglova, N. A., Dokunikhin, N. S.,  
Fuchkov, V. A.

TITLE: The Nature of the Hydrogen Bond and Its Influence on the  
Electron Spectrum of Molecules

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 132, No. 6,  
pp. 1372 - 1375

TEXT: In the introduction, the authors discuss data published on the influence of the hydrogen bond on the vibration spectra of molecules, mentioning papers by N. D. Sokolov (Ref. 1) and A. N. Frumkin (Ref. 5). Then, they investigate the coplanar system of  $\alpha$ -hydroxy anthraquinone in which a  $\pi$ -electron interaction takes place, and the C=O group is decisive for the electron excitation. The authors assume the formation of a quasiaromatic ring by means of the H-bond (Fig. 1). The investigation of the electron vibration spectra of this compound and some of its derivatives yielded the valence vibration of the C=O group in the basic state. On absorption of a light quantum, a change in the distribution of

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The Nature of the Hydrogen Bond and Its  
Influence on the Electron Spectrum of Molecules

S/020/60/132/06/41/068  
B004/B005

the electron density, of the interatomic distances, etc. occurs which may lead to a solidification of the ring containing the H-bond (O-H...O=C). In the excited state, the action of the p-orbit of the H-atom becomes more probable. The rate of transformation of electron energy into vibration energy, and the probability of a redistribution of vibration energy on sublevels increase in this connection. The life of each excited vibration is reduced, and the luminescence spectra of the compounds containing the H-bond have a blurred fine structure. This is confirmed by the luminescence spectra of 1-hydroxy-, 1,4-, and 1-5-hydroxy anthraquinone which in fact show no fine structure (Fig. 2, insert after p. 1341). The luminescence spectra of  $\alpha$ -methyl-,  $\alpha$ -methoxy-, and  $\alpha$ -phenyl anthraquinone (Fig. 2) having no H-bond show a fine structure. The data of the spectra are compiled in Table 1. The difference between absorption- and emission spectra is discussed; it is explained by the circumstance that the structure of the molecule and its electronic state change with the absorption of the energy quantum  $h\nu_{\text{abs}}$ ; this change is only eliminated after emission of the light quantum  $h\nu_{\text{emiss}}$ . In substances with H-bond, the excited electron level formed after absorption of  $h\nu_{\text{abs}}$  is not

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The Nature of the Hydrogen Bond and Its Influence S/020/60/132/06/41/068  
on the Electron Spectrum of Molecules B004/B005

identical with the electron level at which emission begins (Fig. 3). Coplanarity is a condition for the occurrence of such intramolecular bonds. The increased interaction of a bridge with H-bond on the basis of 9-(p-hydroxy)-phenyl acridine investigated by A. N. Terenin and V. V. Shablya (Ref. 13), and the important role of these phenomena in migration processes of the energy in high-molecular compounds (polyamides, protein, etc.) are pointed out. Levshin's law of mirror symmetry is mentioned. There are 2 figures, 1 table, and 15 references: 14 Soviet, 1 British, and 1 US. X

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physical-chemical Institute imeni L. Ya. Karpov)

PRESENTED: February 11, 1960, by A. N. Terenin, Academician

SUBMITTED: February 14, 1960

Card 3/3

SHIGORIN, D.N.; SHCHEGLOVA, N.A.; DOKUNIKHIN, N.S.

Luminescence spectra of halo derivatives of anthraquinone  
in frozen solutions. Dokl.AN SSSR 133 no.2:420-423  
Jl '60. (MIRA 13:7)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova. Pred-  
stavleno akademikom A.N. Terghinym.  
(Anthraquinone--Spectra)

DOKUNIKHIN, N.S.; GAYEVA, L.A.

Effect of thallium on orientation during the sulfonation of anthraquinone. Zhur VKHO 6 no.2:234-235 '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley imeni K. Ye. Voroshilova.  
(Anthraquinone) (Sulfonation) (Thallium)

DOKUNIKHIN, N.S.; MOISEYEVA, Z.Z.

Synthesis of polycyclic ketones. 3,4-Benzopyrenequinone. Zhur.  
KVHO 6 no.2:235-236 '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K. Ye. Voroshilova.  
(Benzopyrenequinone)

DOKUNIKHIN, N.S.; GERASIMENKO, Yu.Ye.

Thioindigoid dyes. Part 6: Ethoxy and ethoxynitro substituted  
derivatives of thioindigo. Zhur. ob. khim. 31 no.1:219-223 Ja '61.  
(MIRA 14:1)

✓ 1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye. Voroshilova.  
(Thioindigo)

DOKUNIKHIN, N.S.; GAYEVA, L.A.

Direct mercuration of anthraquinone. Zhur.VKHO 6 no.1:112-113  
'61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley im. K.Ye.Voroshilova.  
(Anthraquinone) (Mercuration)

DOKUNIKHIN, N.S.; YEGOROVA, L.M.

2, 11-Indanthrenedicarboxylic acid. Zhur.VKHO 6 no.5:593-594  
'61. (MIRA 14:10)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye.Voroshilova.  
(Indanthrenedicarboxylic acid)

23857  
S/020/61/137/006/019/020  
B101/B201

24,3500(1137,1138,1395)

AUTHORS: Shigorin, D. N., Shcheglova, N. A., and Dokunikhin, N. S.

TITLE: Expressions of the autonomy of electron groupings in luminescence spectra of complicated molecules

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 6, 1961, 1416-1419

TEXT: A quantum-mechanical study of the electron levels of simple molecules with multiple bonds has yielded the following results: 1) excitation is in relation with the participation of  $\pi$ - and p-electrons of the chromogenic group ( $>C=C<$ ,  $C=O$ , etc.), on whose energetic state the substituents (auxochromes) bear an influence. The authors of the present paper wanted to clarify the problem as to whether the autonomy of electron groupings (chromophores) appears both with absorption and with emission (luminescence). The luminescence spectra of complicated molecules were examined, such as anthraquinone (II), phenanthrene quinone (TII), and anthrone (IV), as well as thioindigo and its derivatives. The investigation was conducted at concentrations of  $10^{-4}$ - $10^{-5}$  mole/l in n-paraffins,  $T = 77^{\circ}K$ . Results are presented in Fig. 1. For II, its  $\alpha$ - and  $\beta$ -monohalogen-,  $\alpha$ -methyl-,  $\alpha$ -phenyl,

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Expressions of the ...

and  $\alpha$ -methoxy derivatives, as well as for III and IV the following was found: the distance between the intensive bands and the weak bands amounts to  $1664\text{ cm}^{-1}$  (for III and IV  $1686\text{ cm}^{-1}$ ) corresponding to the frequency of stretching vibrations of the chromophore C=O group. For mesobenzanthrone, its mono- and dibromo derivative, and for thioindigo the fine structure is, in accordance with E. V. Shpol'skiy (UFN, 68, 51 (1959); 71, 215 (1960)) characterized by the frequencies of the symmetric vibrations of condensed aromatic rings, and not by the frequencies of the stretching vibrations of the C=O group, which, consequently, does not act as chromophore in these compounds. It is inferred from the foregoing that an unequivocal autonomy of electron groups (chromophores) appears both in the absorption and luminescence spectrum of complicated molecules. These effects are best observed at low temperatures, since at higher temperatures the spectrum becomes unclear due to transformation of electron energy into vibrational energy of the rings. For molecules with two chromophore groups at low temperatures it has been noted that depending on the conditions of excitation ( $\lambda$ , temperature, medium) either electron state, but also both spectra, may be observed. A further fact that confirms the conservation and the strengthening of hydrogen bonds in  $\alpha$ -hydroxy derivatives of anthraquinone in

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the excited state is the luminescence spectrum of 1, 4, 5, 8-tetrahydroxy anthraquinone. Each C=O group participates in two H bonds, so that four additional quasiaromatic rings, a quasi-corona



(X) forms.

The spectrum of this compound displays frequencies similar to those of the corona as well as frequencies that are characteristic of anthracene. A chromophore system is formed which comprises rings with H bonds, and in which the frequencies of the stretching vibrations of the C=O groups are no more determinative. The spectra of  $\beta$ -substituted anthraquinone (Br, I, R-O-C=O) allow the conclusion to be drawn that (under adequate conditions of excitation) the intensity of the Raman band of the chromophore (C=O) and the intensity, corresponding to the  $Q'' - Q'$  transition in the luminescence spectrum, change. To conclude: local, "multicentered" electron orbits may arise with the participation of  $\pi$  electrons in complicated molecules. Academician

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Expressions of the ...

A. N. Terenin is thanked for discussions. There are 1 figure and 11 references: 10 Soviet-bloc and 1 non-Soviet-bloc. The reference to English-language publication reads as follows: E. Y. Bowen, B. Brocklehurst, J. Chem. Soc., 1954, 3875.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Physicochemical Institute im. L. Ya. Karpov)

PRESENTED: November 9, 1960, by A. N. Terenin, Academician

SUBMITTED: November 2, 1960

Fig. 1. Luminescence spectra of anthraquinone derivatives in heptane at 77°K.

Legend: a)  $\lambda_{Hg} = 313 \text{ m}\mu$ ; b)  $\lambda_{Hg} = 365 \text{ m}\mu$ ; 1)  $\alpha$ -chloroanthraquinone; 2) 1, 8-dihydroxy anthraquinone; 3) 1, 5-dihydroxy anthraquinone; 4) 1, 4, 5, 8-tetrahydroxy anthraquinone (A = emission; 5 = absorption); 5) anthrone (in hexane), the shortwave part of the spectrum with  $\lambda_{init} = 4043 \text{ A}$  is not shown;

Card 4/6

DOKUNIKHIN, N.S.; GERASIMENKO, Yu.Ye.

Thioindigoid dyes. Part 7: Thioindigoid dyes with methylsulfonyl groups. Zhur.ob.khim. 31 no.6:1927-1931 Je '61. (MIRA 14:6)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley imeni K.Ye.Voroshilova.

(Dyes and Dyeing) (Thioindigo)

DOKUNIKHIN, N.S.; GERASIMENKO, Yu.Ye.

Thioindigoid dyes. Part 8: Ethoxymethylsulfonyl substituted  
thioindigo. Zhur.ob.khim. 31 no.6:1931-1934 Je '61. (MIRA 14:6)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley imeni K.Ye.Voroshilova.  
(Thioindigo)

DOKUNIKHIN, N.S.; MOISEYEVA, Z.Z.; BURENKO, S.N.

Derivatives of anthraquinone. Part 1: Synthesis of chloro-substituted 2-anthraquinonecarboxylic acid. Zhur.ob.khim. 31 no.12:3985-3987 D '61. (MIRA 15:2)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley.  
(Anthraquinonecarboxylic acid)

DOKUNIKHIN, N.S.; GAYEVA, L.A.

Mercuration of 1-anthraquinonesulfonic acid. Zhur.VKHO 7 no.2:  
236-237 '62. (MIRA 15:4)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley.  
(Anthraquinonesulfonic acid) (Mercuration)

DOKUNIKHIN, N.S.; BYSTRITSKIY, G.I.

Derivatives of benz-(c,d)-indoline. Part 6: Synthesis and reactions of 1-aminobenz-(c,d)-indolin-2-one. Zhur.ob.khim. 32 no.4:1332-1334 Ap '62. (MIRA 15:4)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley.

(Benzindolinone)



DOKUNIKHIN, N. S.; KOLOKOLOV, B. N.

Effect of the nature and position of halogen on the behavior of  
monohaloanthraquinones in paper chromatography. Zhur. VKHO 7  
no.5:597 '62. (MIRA 15:10)

1. Gosudarstvennyy nauchno-issledovatel'skiy institut organi-  
cheskikh poluproduktov i krasiteley.

(Anthraquinone) (Halogens)  
(Paper chromatography)

NURMUKHAMEDOV, R.N.; BONDAREVA, L.V.; BABKINA, V.G.; DOKUNIKHIN, N.S.;  
ABRAMOVA, N.I.

Study of the behavior of some vat dyes in fabrics from their  
fluorescence spectra. Zhur. VKHO 8 no.5:588-589 '63.

(MIRA 17:1)

1. Nauchno-issledovatel'skiy institut organicheskikh polupro-  
vodnikov i krasiteley.

DOKUNIKHIN, N.S.; SHEYN, S.M.; BOGUSLAVSKAYA, I.L.

Interaction of 1,4- and 2,3-fluorochloroanthraquinones  
with a solution of ammonia. Zhur. VKHO 8 no.5:594-595 '63.  
(MIRA 17:1)

1. Nauchno-issledovatel'skiy institut organicheskikh polu-  
produktov i krasiteley.

DOKUNIKHIN, N.S.; BYSTRITSKIY, G.I.

Derivatives of benz(c,d) indoline. Part 7: Synthesis and reactions of 1-arylamino benz(c,d)indolin-2-one. Zhur.ob. khim. 33 no.2:680-683 F '63. (MIRA 16:2)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley.  
(Benzindolinone)

DOKUNIKHIN, N.S.; BYSTRITSKIY, G.I.

Derivatives of benz(cd)indoline. Part 8: Transformations of  
1-arylamino benz(cd)indolin-2-ones; opening of a heterocycle  
and rearrangement of pericarboxylic acids of hydrazo compounds.  
Zhur.ob.khim. 33 no.3:974-980 Mr '63. (MIRA 16:3)

1. Nauchno-issledovatel'skiy institut organicheskikh  
poluproduktov i krasiteley (NIOPKh).  
(Benzindolinone) (Hydrazo compounds)  
(Rearrangements (Chemistry))

DOKUNIKHIN, N.S.; MIKHALENKO, S.A.

1,9-Substituted fluorenes. Part 1: Synthesis and transformations  
of 2,3 H-pyridazine(4,5,6-m,p)fluoren-3-one. Zhur.ob.khim. 33  
no.6:1974-1977 Je '63. (MIRA 16:7)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley.

(Fluorenone) (Pyridazine)

DOKUNIKHIN, N.S.; BYSTRITSKIY, G.I.

Derivatives of benz [c,d] indoline. Part 9: 1-Amino-6-bromo-  
and 1-phenylamino-6-bromobenz[c,d] indolin-2-ones. Zhur. ob.  
khim. 33 no.8:2712-2714. Ag. '63. (MIRA 16:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley.

DOKUNIKHIN, N.S.; BYSTRITSKIY, G.I.

Derivatives of benz [c,d]indoline. Part 10: 1-Amino- and  
1-arylamino benz [c,d]indoline-2-thione. Zhur. ob. khim. 33  
no.8:2714-2716 Ag '63. (MIRA 16:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley.



DOKUNIKHIN, N.S.; GAYEVA, L.A.

Derivatives of anthraquinone. Part 2: Mercuration and catalytic sulfonation of anthraquinone. Zhur. ob. khim. 33 no.8:2727-2734 Ag '63. (MIRA 16:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley.

SHCHEGLOVA, N.A.; SHIGORIN, D.N.; DOKUNIKHIN, N.S.

Luminescence of monohalo derivatives of anthraquinone in frozen solutions. Zhur. fiz. khim. 36 no.9:1938-1946 S '62.

(MIRA 17:6)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova, Moskva.

DOKUNIKHIN, N.S.; FAYN, V.Ya.

[Anthraquinonyl- 1-carbonyl]-aminoanthraquinones. Zhur. prikl.  
khim. 36 no.12:2768-2771 D'63. (MIRA 17:2)

1. Nauchno-issledovatel'skiy institut organicheskikh polupro-  
duktov i krasiteley i filial Nauchno-issledovatel'skogo  
instituta organicheskikh poluproduktov i krasiteley, g.  
Rubezhnoye.

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S/076/63/037/002/010/018  
B101/B186

24.3500

AUTHORS: Shcheglova, N. A., Shigorin, D. N., Ryabchikova, T. S.,  
Dokunikhin, N. S., Moiseyeva, Z. Z. (Moscow)

TITLE: Study of the luminescence spectra of some anthraquinone  
carboxylic acid derivatives at low temperatures

PERIODICAL: Zhurnal fizicheskoy khimii, v. 37, no. 2, 1963, 371-377

TEXT: The luminescence spectra of the following compounds were studied in  
n-hydrocarbon solutions or in the powder: anthraquinone- $\alpha$ -carboxylic acid  
and its methyl ester, anthraquinone- $\beta$ -carboxylic acid and its methyl ester,  
anthraquinone-1,4-dicarboxylic acid and its dimethyl and diethyl esters,  
7-chloro-anthraquinone-2-carboxylic acid and its methyl ester, 7-fluoro-  
anthraquinone-2-carboxylic acid and its methyl ester, 6-fluoro-  
anthraquinone-2-carboxylic acid and its methyl ester, and 6-chloro-  
anthraquinone-2-carboxylic acid. Results: The luminescence spectra of  
the esters and their halogen derivatives at 77°K have a fine vibration  
structure. The carbonyl of the anthraquinone ring had the highest  
frequency. The multiplicity of the spectra proved to be highly dependent

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Study of the luminescence ...

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on the length of the hydrocarbon chain of the solvent (n-hexane, n-heptane, n-octane, n-nonane) which fact can be used in the analysis of these compounds. Each substituent being an auxochrome (F, Cl, COOH, COOCH<sub>3</sub>) has a specific effect on the spectrum, manifest in line shifts and intensity changes of the major peaks. The luminescence spectra of the powdered halogen derivatives of the acids as well as the esters had no fine structure at 77°K, but a system of narrow bands shifted toward the longwave region. The interdistance between the centers of these bands equals the carbonyl frequency of anthraquinone. In powdered 1,4-anthraquinone dicarboxylic acid, reversible self-extinction of the luminescence was observed. This effect disappeared in dioxane solution. The self-extinction is explained by intermolecular interaction (and photo transfer) of one carboxyl proton with the p electrons of the oxygen in the anthraquinone carbonyl group, which effect electron excitation by  $p \rightarrow \pi^*$  transition. This assumption was confirmed by measuring the IR frequency of the carbonyl group. There are 2 figures and 3 tables.

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova  
(Physicochemical Institute imeni L. Ya. Karpov)  
SUBMITTED: November 16, 1961

SHIGORIN, D.N.; SHCHEGLOVA, N.A.; PISKUNOV, A.K.; OZEROVA, G.A.;  
DOKUNIKHIN, N.S.

H-bonds in excited electronic states of molecules with  
 $\pi$ -electrons. Dokl. AN SSSR 150 no.4:862-865 Je '63.  
(MIRA 16:6)

1. Fiziko-khimicheskiy institut imeni L.Ya. Karpova.  
Predstavleno akademikom A.N. Tereninym.  
(Molecular spectra)  
(Hydrogen bonding)

DOKUNIKHIN, N.S.; SAIOV, B.V.; GLAGOLEVA, A.S.

Derivatives of anthraquinone. Part 3: Synthesis of fluoro-substituted 2-anthraquinonecarboxylic acid and 2-aminoanthraquinone. Zhur. ob. khim. 34 no. 3:995-998 Mr '64. (MIRA 17:6)

1. Nauchno-issledovatel'skiy institut poluproduktov i krasiteley.

DOKUNIKHIN, N.S.; SHEYN, S.M.; BOGUSLAVSKAYA, I.L.

Derivatives of anthraquinone. Part 4: Color and structure of 1-amino-2-benzoylanthraquinone and 7,8-phthaloylacridone derivatives. Zhur. ob. khim. 34 no. 5:1565-1569 My '64.  
(MIRA 17:7)

1. Nauchno-issledovatel'skiy institut promezhutechnykh produktov i krasiteley, Rubezhanskiy filial.



DOKUNIKHIN, N.S.; FAYN, V. Ya.

Pyridazone-anthrone and its derivatives. Part 1. Zhur. ob.  
khim. 34 no.7:2372-2374 J1 '62 (MIRA 17:8)

Some derivatives of anthracene-1-carboxylic and anthracene-1,4-  
carboxylic acids. Ibid.:2374-2378

1. Nauchno-issledovatel'skiy institut organicheskikh polupre-  
duktov i krasiteley i yego filial v g. Rubzhnoye.

DOKUNIKHIN, N.S.; MIKHALENKO, S.A.

Transformations of 3-hydrazinopyridazine[4,5,6-m,1]-fluorene.  
Zhur. ob. khim. 34 no.7:2473-2474 J1 '64 (MIRA 17:8)

1. Nauchno-issledovatel'skiy institut organicheskikh polu-  
produktov i krasiteley.

L 29106-45 BWT(m)/BWT(s) Pc-Ii BSD/SSD(c)/APWL/ASD(a)-E/AS(mc)-2/ASG(h)/BDD/as  
 ACCESSION NR: AP4044439 RM S/0076/64/038/008/1963/1972

AUTHOR: Shcheglova, N. A. (Moscow); Shigorin, D. N. (Moscow); Dokunikhin, N. S. (Moscow)

TITLE: Luminescence and absorption spectra of alpha and beta hydroxyanthraquinones

SOURCE: Zhurnal fizicheskoy khimii, v. 38, no. 8, 1964, 1963-1972

TOPIC TAGS: hydroxyanthraquinone, absorption spectrum, luminescence spectrum, hydrogen bond, molecular excitation

ABSTRACT: The luminescence and absorption spectra of  $\alpha$ - and  $\beta$ -hydroxy-dihydroxy and tetrahydroxyanthraquinones and some of their methoxy derivatives in normal hydrocarbons were investigated in order to study the spectra of compounds containing intramolecular hydrogen bonds and their manifestation in the electronic state. It was found that the shape and position of luminescence and absorption bands of a number of hydroxyanthraquinones and some of their methoxy-substituted derivatives in n-hydrocarbons at 77K depend on the number and position of the hydroxy groups in the anthroquinone ring. The luminescence spectra

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ACCESSION NR: AP4044439

of  $\alpha$ -hydroxy, 1,5-dihydroxy,  $\beta$ -hydroxy and 2,6-dihydroxyanthraquinones are washed out and shifted toward the red. The washed-out nature of spectra is closely related to the shortened lifetime of the excited state of hydroxyanthraquinones as compared with anthraquinone. Both the luminescence and absorption spectra of 1,4-dihydroxy-, 1,2,5,8- and 1,4,5,8-tetrahydroxyanthraquinone show a vibrational fine structure. For these substances the energies of the purely electronic transitions are  $19115\text{ cm}^{-1}$ ,  $18774\text{ cm}^{-1}$  and  $17970\text{ cm}^{-1}$ , respectively. The H bond has a significant effect on the nature of the electronic transitions of the molecule. From the comparison of the spectra of  $\alpha$ -hydroxy and  $\alpha$ -methoxyanthraquinones it is apparent that the formation of H bond leads to the red wavelength shift of absorption and luminescence spectra and also to the increase of the intensity of the long wavelength absorption bands. The energy of the H bond has been determined in the excited state for  $\alpha$ -hydroxy derivatives of anthraquinones. The energy of the H bond greatly increases during the transition of the molecule into the excited electronic state, which is explained by the formation of the  $\pi$ -complex of the excited state during the formation of the H bond. Original has tables and 4 figures.

Card 2/3

L 20106-65

ACCESSION NR: AP4044439

ASSOCIATION: Fiziko-khimicheskiy institut im. L. Ya. Karpova (Institute of  
Physical Chemistry)

SUBMITTED: 21Aug63

ENCL: 00

SUB CODE: GC, *OP*

NO REF SOV: 012

OTHER: 008

Card 3/3

DOKUNIKHIN, N.S.; FAYN, V.Ya.

Pyridazonanthrone and its derivatives. Part 2: N-arylpyridazonanthrones. Zhur. ob. khim. 34 no.10:3354-3359 O '64.

(MIRA 17:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley i filial Nauchno-issledovatel'skogo instituta organicheskikh poluproduktov i krasiteley v g. Rubezhnoye.

DOKUNIKHIN, N.S.; SHTEYNBERG, Ya.B.

Derivatives of benz [c,d] indoline. Part 12: Benz[c,d]indoline-2-oximes and benz[c,d]indoline-2-hydrazones. Zhur. ob. khim. 34 no.10: 3359-3362 O '64. (MIRA 17:11)

1. Filial Nauchno-issledovatel'skogo instituta poluproduktov i kra-siteley v g. Rubezhnoye.

BABKINA, V.G.; DOKUNIKHIN, N.S.; ABRAMOVA, N.I.

Change in shades taking place in some vat dyes under the effect of moisture and temperature. Zhur. prikl. khim. 37 no.6:1328-1333  
Je '64. (MIRA 18:3)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley.



SHCHERLOVA, N.A.; SHIGORIN, D.M.; DOKUNICHIN, P.S. (Moscow)

luminescence and absorption spectra of  $\alpha$ - and  $\beta$ -hydroxyanthraquinones.  
Zhur.fiz.khim. 38 no.8: 1662-1972 Aug '64. (MIRA 13:1)

1. Fiziko-khimicheskiy institut imeni I.Ya.Karpova.

DOKUNIKHIN, N.S.; FAYN, V.Ya.

Pyridazoneanthrone and its derivatives. Part 3: Oxazoneanthrone  
and its relation to pyridazoneanthrone. Zhur. ob. khim. 34  
no.11:3769-3771 N '64 (MIRA 18:1)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley i yego filial v g. Rubezhnoye.

DOKUNIKHIN, N.S.; GAYEVA, L.A.

New disulfonic acids of anthraquinone. Zhur. org. khim. 1 no.1:201-  
202 Ja '65. (MIRA 18:5)

DOKUNIKHIN, N.S.; KOLOKOLOV, B.N.

Paper chromatography of anthraquinone derivatives. Chloroanthraquinones.  
Zhur. anal. khim. 20 no.3:398-400 '65. (MIRA 18:5)

1. Nauchno-issledovatel'skiy institut poluproduktov i krasitsley,  
Moskva.

DOKUNIKHIN, N.S.; SHEYN, S.M.; BOGUSLAVSKAYA, I.L.

Preparation of 1-amino-2-acyl-4-aryl aminocanthraquinones.  
Zhur.VKHO 10 no.5:596-597 '65.

(MIRA 18:11)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov i krasiteley, filial v gorode Rubzhnoye.

DOKUNIKHIN, N.S.; MOISEYEVA, Z.Z.; MAKAROVSKAYA, G.M.

Synthesis of indeno[1,2-*a*]phenalene-7,8-dione and its derivatives.  
Zhur. org. khim. 1 no. 12:2148-2151 D '65 (MIRA 19:1)

1. Nauchno-issledovatel'skiy institut organicheskikh poluproduktov  
i krasiteley, Moskva. Submitted October 29, 1964.

DOKUNIKHIN, N.S.; MOISEYEVA, Z.Z.; MAKAROVSKAYA, G.M.

Preparation of 2-acyl-1,3-indandiones. Zhur. V KHO 10 no. 6:  
714 '65 (MIRA 19:1)

1. Nauchno-issledovatel'skiy institut organicheskikh po u-  
produktov i krasiteley. Submitted July 8, 1965.

L 08035-67 EWT(m)/EWP(j) RM

ACC NR: AP7001654

SOURCE CODE: UR/0409/66/000/002/0254/0258

POPOV, S. I., KURDYUMOVA, T. N., ~~DOKUNIKHIN, N. S.~~, Scientific Research  
Institute of Organic Intermediates and Dyes, Moscow (Nauchno-Issledovatel'skiy  
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29

B

"Studies of Anthrapyridone, I. Interaction Between Anthrapyridone Derivatives  
and Phosphorus Pentachloride"

Riga. Khimiya Geterotsiklicheskikh Soyedineniy (Chemistry of Heterocyclic  
Compounds), No 2, 1966, pp 254-258

Abstract: It was established that, the reaction between phosphorus pentachloride and N-methylantrapyridone commences not only at 180°C but also at lower temperatures; in chlorobenzene at 130°C a crystalline substance which analysis found to correspond to the product of the association of a molecule of phosphorus pentachloride to a molecule of N-methylantrapyridone, could be isolated; this substance was structurally identified as 2-tetrachlorophosphoryl-3-methyl-7-oxo-7N-dibenz[f, i] isoquinolinium chloride and it readily reacts with primary amines, forming the corresponding 2-imines of N-methylantrapyridone. By contrast, at 180°C the reaction between phosphorus pentachloride and N-methylantrapyridone results in the formation of 2-chloroanthrapyridine. [JPRS: 36,455]

TOPIC TAGS: phosphorus chloride, heterocyclic base compound, amine

SUB CODE: 07 / SUBM DATE: 10Nov64 / ORIG REF: 003 / OTH REF: 006

Card 1/1 mc

UDC: 547.837.6+542.944.4/542.958.3



DOKUNIKHIN, N.S.; FAYN, V.Ya.; PACHEVA, N.A.

4-Methyl-1-(alkyl, aryl)-aminocanthraquinones. Zhur, prikl. khim.  
38 no.11:2619-2621 N '65.

(MIRA 18:12)

1. Submitted November 23, 1963.

USSR/Farm Animals - Large Horned Cattle.

Q-2

Abs Jour : Ref Zhur - Biol., No 18, 1958, 83340

Author : Odynets, R.N., Yakovlev, V.G., Dokunin, A.F.,  
Mamel'nitskaya, Z.D.

Inst : Institute of Zoology and Parasitology, AS KirgSSR.

Title : The Effect of Sugar Beets upon Nitrogen, Calcium, and  
Phosphorus Metabolisms in Milch Cows.

Orig Pub : Tr. In-ta zool. i parazitol. AN KirgSSR, 1957, vyp. 6,  
231-240.

Abstract : In addition to their usual diet, Alatauian breed cows re-  
ceived 40-45 kg of fodder beets in the first series of  
tests. In the second series of tests they received in ad-  
dition to their usual diet 20 kg of sugar beets (5 kg 4  
times daily). When sugar beets were fed to the animals,  
the following blood indicators became higher: the water

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USSR/Farm Animals - Large Horned Cattle.

Q-2

Abs Jour : Ref Zhur - Biol., No 18, 1958, 83340

amount rose from 81.70 to 82.12 percent; the glucose amount increased from 43 to 48 mg percent; the coefficient of utilizing Ca for milk formation and for organism deposits rose from 26.0 to 36.7 percent. The following indicators were decreased: anorganic phosphorus in blood, from 6.1 to 4.9 mg percent; coefficient of protein digestibility, from 55.8 to 51.1 percent; excretion of nitrogen with urine, from 36.7 to 23.4 percent; excretion of acetone with urine, from 23.7 to 19.9 gr daily. In the milk of cows which were fed sugar beets, the following indicators were increased: the amount of dry substances increased from 12.7 to 13.4 percent; the fat content rose from 3.88 to 4.5 percent; the protein amount rose from 4.08 to 4.27 percent; and the calcium content rose from 0.157 to 0.164 percent.

Card 2/2

DOKUNIN, Anatoliy Grigor'yevich; BELOSKURSKIY, G.N., red.; LEEDEVA,  
I.D., red.izd-va; GRECHISHCHEVA, V.I., tekhn. red.

[Manual for the sawmill foreman] Rukovodstvo masteru leso-  
zavoda. Moskva, Goslesbumizdat, 1961. 148 p.

(MIRA 15:4)

(Sawmills)

DOKUNIN, A.V., prof., doktor tekhn.nauk, otv. red.; VOLKOVA, V.A.,  
red. izd-va; GALANOVA, V.V., tekhn. red.

[Mining machinery] Gornaya mekhanika; sbornik statei. Moskva,  
Gosgortekhnizdat, 1961. 318 p. (MIRA 15:7)

1. Akademiya nauk SSSR. Institut gornogo dela.  
(Mining machinery)

DOXUNINA, N.A.

25(1.6) PAGES I BOOK EXPLORATION 307/1592

Академия наук СССР. Институт машиноведения

Основоные вопросы точности, взаимозаменяемости и техниче-  
ской надежности (Basic Problems of Accuracy, Inter-  
changeability and Engineering Reliability) Machine Building  
Moscow, Mashgis, 1978. 411 p. 4,500 copies printed.

Ed.: A.M. Gavrilov, Doctor of Technical Sciences, Professor,  
Tech. Ed.: B.I. Medel', Managing Ed. for literature on Metal  
Working and Tool Making (Mashgis): B.D. Boyzel'man, Engineer.

PURPOSE: This collection of articles is intended for engineering  
and scientific workers and for teachers and students of machine  
and instrument building courses.

COVERAGE: This collection of articles presents the works of a con-  
ference on basic problems of accuracy, interchangeability and  
engineering reliability, convened in March 1956 by the Machine  
Building Technology Commission of the USSR Academy of Sciences  
Machine Construction of the USSR Academy of Sciences, USSR), the  
State Committee for Modern Technology, the Committee for  
Standard Weights and Measures, the Ministry of Machine Building and the  
Ministry of Higher Education of the USSR. In the articles and  
dealing with accuracy of fabrication, problems of the theory and  
practice of calculating accuracy of standard processes and  
standard products are discussed. In the articles on inter-  
changeability and engineering measurements an evaluation of the  
present state of this field is presented along with the  
scientific and engineering outlook for the future. Theoretical  
and practical problems of automatic inspection are discussed.  
No specialities are mentioned. There are 140 references of  
which 121 are Russian, 10 German, 8 English, 1 French.

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Basic Problems of Accuracy (Cont.) 307/1592

Burdum, G.D., Doctor of Technical Sciences, Professor.  
Present State and Problems of Soviet and International  
Work in the Field of Metrology 254

Lyndon, Yu.M., Candidate of Technical Sciences. Methods  
and Practice of Determining Allowable Variations in the  
Geometric Form of Machine Parts 264

Doshakov, V.V., Engineer. Present State and Anticipated  
Problems of Interchangeability of Irregular Machine Parts 273

Zhigal, L.P., Candidate of Technical Sciences. Present  
State and Anticipated Problems of Interchangeability  
of Spline Joints 285

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and Practice of Securing Interchangeability of Articles  
of Irregular Curvilinear Form 293

Velodin, Ye.I., Candidate of Technical Sciences. Allowable  
Errors in Sizes of Machine Parts Beyond the Zone of  
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PHASE I BOOK EXPLOITATION

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Dokunina, Natal'ya Aleksandrovna

Metody i sredstva kontrolya geometricheskikh parametrov v samoletostroyenii (Methods and Means for Controlling Geometric Parameters in Aircraft Construction) Moscow, Oborongiz, 1959. 131 p. Errata slip inserted. 3,500 copies printed.

Reviewer: S.A. Vigdorchik, Engineer; Ed. of Publishing House: M.F. Bogomolova;  
Tech. Ed.: V.P. Rozhin; Managing Ed.: A.I. Sokolov, Engineer.

PURPOSE: This book is intended for production engineers, foremen, and inspectors in lofting and template shops, shops making preparatory and assembly fixtures, preparatory-stamping shops, and assembly shops in aircraft construction plants.

COVERAGE: This book is concerned with the methods and means for systematic control of the dimensions of components, assemblies, and equipment used in aircraft construction. The first chapter presents the basic principles of selecting means and methods for dimensional control. The practices of dimensional control commonly used in general machine construction are discussed and particular attention is given to a factors which may influence measurement errors in the dimensional control of aircraft manufacture. The second chapter discusses basic parameters in lofting and template work which are subject to control and describes in de-

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Methods and Means for Controlling Geometric (Cont.)

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tail the means and methods used and analyzes causes of errors. The third chapter deals with dimensional control of preparatory-stamping and assembly equipment. Included in the discussion are physical devices for transferring shapes and dimensions, such as, templates, calipers, measuring standards, and optical devices. Errors in lofting jigs and layout machines are analyzed and methods for checking them are given. The fourth chapter describes dimensional control of an airframe composed of sheet metal and shaped components, such as, ribs, bulkheads, skin, etc. The fifth chapter defines the accuracy parameters of the geometrical forms of subassemblies making up the airframe and discusses dimensional control. Methods are included which as yet are little known in aircraft plants. No personalities are mentioned. There are 4 references, all Soviet.

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Literature Cited

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AVAILABLE: Library of Congress

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IS/sfm  
10-28-59

DOKUHINA, N.A., kand.tekhn.nauk

Practices in the fields of interchangeability in airplane construction. Trudy NTO sud.prom. 8 no.3:93-97 '59.

(MIRA 13:5)

(Airplanes--Design and construction)

YAKUSHEV, A.I., prof., doktor tekhn.nauk, red.; VOLODIN, Ye.I., kand.  
tekhn.nauk, red.; GANCHEV, N.N., kand.tekhn.nauk, red.; LYANDON,  
Yu.N., kand.tekhn.nauk, red.; DOKUNINA, N.A., kand.tekhn.nauk,  
red.; KOCHETOVA, G.F., red.isd-va; UVAROVA, A.F., tekhn.red.

[Interchangeability and mensuration in the manufacture of machines;  
collected articles of institutions for higher education] Vsaimo-  
zameniaemost' i tekhnika izmerenii v mashinostroenii; mezhvuzovskii  
sbornik. Pod red. A.I.Iakusheva. Moskva, Gos.nauchno-tekhn.isd-vo  
mashinostroit.lit-ry. No.1. 1959. 232 p. (MIRA 13:4)

1. Moscow. Stankoinstrumental'nyy institut.  
(Mensuration) (Interchangeable mechanisms)

BELIKOV, Sergey Ivanovich, inzh.; DOKUNINA, Natal'ya Aleksandrovna,  
kand. tekhn. nauk; BURDINA, Nadezhda Nikolayevna, inzh.;  
KRINZBERG, F.Ye., inzh., retsenzent; YAKUSHEV, A.I., prof.doktor  
tekhn. nauk, retsenzent; BUMSHEYN, S.I., inzh., red.;  
STEPANOVA, A.A., red. izd-va; NOVIK, A.Ya., tekhn. red.

[Allowances, fits and technical measurements in the  
manufacture of aircraft] Dopuski, posadki i tekhnicheskie iz-  
mereniia v proizvodstve letatel'nykh apparatov. Moskva, Oboron-  
giz, 1963. 290 p. (MIRA 17:2)

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"Hexokinase Activity and Oxidative Phosphorylation in the  
Liver of Biotin-Deficient Chicks (Read by title)."

Report presented at the 5th International Biochemistry Congress,  
Moscow, 10-16 August 1961

DOKUSOVA, O.K.; IL'IN, V.S.

Changes in energy metabolism in the liver of chickens with  
biotin deficiency. Biokhimiia 29 no.5:854-862 J1-Ag '64.  
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1. Otdel biokhimii Instituta eksperimental'noy meditsiny AMN  
SSSR, Leningrad.

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BALASCAK, J., DVM; SKARDA, R., DVM; GRIEGER, C., DVM; DOLABAC, J.,  
DVM.

Prague, Veterinarstvi, No 6, 1963, pp 259-263

"Chronic Hematurie in Cattle in East Slovakia."



DOLABCHAYNA, Zaven Levonovich, doktor med. nauk; OGANESYAN, L.A.,  
prof., otv. red.

[Studies on synthetic electromechanocardiology] Ocherki  
sinteticheskoi elektromekhanokardiologii. Erevan, Aiastan,  
1965. 361 p. (MIRA 18:10)

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Oganesyan).

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1. Institut kardiologii i sserdechnoy khirurgii (direktor - doktort  
K.A. Kyendaryan) AN SSSR, Yerevan.

DOLABCHYAN, Z.L.; GASPARYAN, K.T.

Electrocardiographic observations in hepatocholecystitis. Zhur.  
eksp. i klin. med. 5 no.1:74-77 '65. (MIRA 18:10)

KYANDARYAN, K.A.; DOLABCHYAN, Z.L.

Spatial vector electrocardiographic study of Ebstein's disease.  
Dokl. AN Arm. SSR 40 no.4:253-256 '65. (MIRA 18:6)

1. Institut kardiologii i serdechnoy khirurgii AMN SSSR.  
Submitted September 21, 1964.